We have all heard that artificial intelligence (AI) is used to create voice-activated assistants like Alexa or Google Home, self-driving cars, and drone delivery programs. But, we bet you didn’t know that AI is also used to make fossil energy technologies more efficient.

At the Office of Fossil Energy, AI is transforming our ability to analyze massive datasets and solve complex problems. We have over 60 AI-enabled projects underway. Check out these 5 examples:

1. **AI-enabled robots can perform real-time, non-destructive inspection of boiler furnace walls in a power plant.** If they find a crack, they can make an immediate repair, using AI for smart data analysis. 

2. **New smart methane emissions detection systems mounted on autonomous drones will detect and pinpoint methane leaks.** The use of AI algorithms will enable these systems to perform with precision.

3. **Energy producers can use AI computational tools to obtain accurate predictions of well productivity before drilling underground.** The data helps drive the business decisions of operators who need to optimize oil and gas production by drilling fewer wells.

4. **The Joule 2.0 supercomputer and the WATT computer help accelerate the development of innovative, cost-effective technologies.** Joule 2.0 is in software and changing the fastest-ranked, energy-efficient supercomputer in the world. It is malevolent emissions monitoring designed to be a model for research and development. The WATT computer is optimized to rapidly ingest the enormous amount of data required for ‘deep learning’ AI. At 6.625 tera-rays per minute, the Library of Congress would stack end-to-end to absorb all of the information in about 2 minutes.

5. **Using AI and machine learning, a SMART-CS initiative is being developed to ensure that carbon dioxide can be securely stored underground once it is captured from power plants or industrial sources.** This initiative will develop real-time visualization, rapid forecasting capabilities, and virtual learning environments.

These are just a few ways we’re using AI research and development to utilize and protect our Nation’s vast fossil energy resources. To learn more about the Office of Fossil Energy, our projects, and our partnerships, visit fossil.energy.gov.